



Diagnostic Imaging Pathways - Spinal Cord Compression (Suspected)

Population Covered By The Guidance

This pathway provides guidance on the imaging of adult patients with suspected acute spinal cord compression.

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Quick User Guide

Move the mouse cursor over the **PINK** text boxes inside the flow chart to bring up a pop up box with salient points.

Clicking on the **PINK** text box will bring up the full text.

The relative radiation level (RRL) of each imaging investigation is displayed in the pop up box.

SYMBOL	RRL	EFFECTIVE DOSE RANGE
	None	0
	Minimal	< 1 millisieverts
	Low	1-5 mSv
	Medium	5-10 mSv
	High	>10 mSv

Pathway Diagram

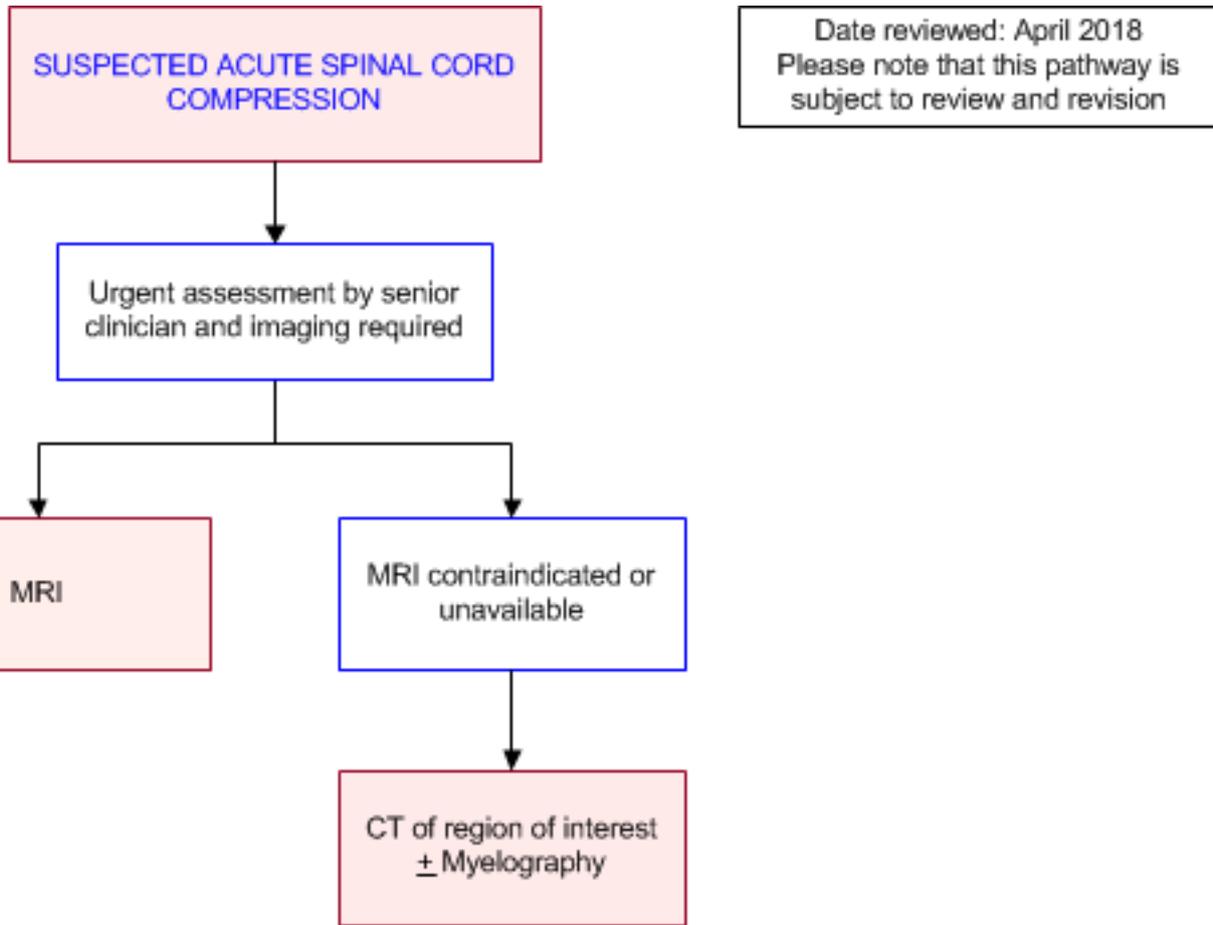


Image Gallery

Note: These images open in a new page

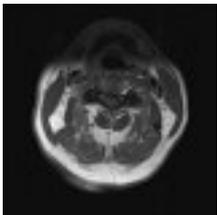
1a



Cervical Spinal Stenosis

Image 1a and 1b (Magnetic Resonance Imaging): Severe spinal stenosis at C3/4 with complete effacement of the CSF space around the cord (arrow). There is high signal within the cord distal to the stenosis which may reflect cord oedema. Mild spinal stenosis at C5/6 and C6/7 (arrows) are also present.

1b



Teaching Points

- A detailed history and thorough clinical examination is required prior to imaging
- Patients should be urgently assessed by a senior clinician, which includes emergency or medical physicians and surgeons

- MRI is the first line modality in the assessment of suspected spinal cord compression
- If MRI is contraindicated, CT +/- myelography may be an alternative

Magnetic Resonance Imaging

- The imaging modality of choice for the investigation of suspected spinal cord or cauda equina compression [1-3](#)
- T1- and T2- weighted sagittal images are generally used with axial images also obtained through identified regions of interest [4](#)
- Gadolinium contrast is preferred for visualisation of intradural and column metastases [3-6](#) although tumour can be detected in many cases without gadolinium [3](#)
- MRI is widely accepted as the best modality to evaluate spinal cord compression although there is a paucity of recent studies on the accuracy of current MRI technology for diagnosing spinal cord compression from metastatic and degenerative disc disease
- In metastatic disease, one third of patients have multilevel disease so the whole spine should be imaged [3, 7, 8](#)
- Advantages:
 - Non invasive
 - It can identify bone lesions without epidural extension, intramedullary metastases and sometimes leptomeningeal disease
 - Excellent soft tissue contrast resolution
 - The entire spine can be imaged and multiple sites of compression identified [9-11](#)
- Contraindicated with ferromagnetic prostheses such as some pacemakers, aneurysm clips, cochlear implants or ocular foreign bodies. Claustrophobia and the long scanning time may not be tolerated by some patients

Computed Tomography and Myelography

- If MRI is contraindicated or unavailable then computed tomography (CT) may be an alternative [12](#)
- CT can also be useful in surgical planning to evaluate for spinal instability
- CT without myelography shows bony infiltration or vertebral collapse from tumour but is not sensitive for detecting cord compression [3](#)
- A study found a sensitivity and specificity of 89 percent and 92 percent respectively for CT when compared to MRI for the detection of metastatic spinal cord compression [13](#)
- There is evidence that CT is comparable to MRI for detecting disc herniation [14-16](#) which is the most common cause of spinal cord compression
- CT myelography may be of use when metal prostheses result in artefact obscuring the area of interest
- CT myelography is an invasive procedure that involves the intrathecal administration of contrast medium followed by computed tomography at the level of thecal sac impingement [17](#)
- Limitations: [4](#)
 - Associated small risk of exacerbating the neurological deficit
 - May be contraindicated in the presence of raised intracranial pressure and coagulopathy

References

Date of literature search: March 2018

The search methodology is available on request. [Email](#)

References are graded from Level I to V according to the Oxford Centre for Evidence-Based Medicine, Levels of Evidence. [Download the document](#)

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